

ABSTRACT OF THE DISCLOSURE

A polarized sample beam of broadband radiation is focused onto the surface of a sample and the radiation modified by the sample is collected by means of a mirror system in different planes of incidence. The sample beam focused to the sample has a multitude of polarization states. The modified radiation is analyzed with respect to a polarization plane to provide a polarimetric spectrum. Thickness and refractive information may then be derived from the spectrum. Preferably the polarization of the sample beam is altered only by the focusing and the sample, and the analyzing is done with respect to a fixed polarization plane. In the preferred embodiment, the focusing of the sample beam and the collection of the modified radiation are repeated employing two different apertures to detect the presence or absence of a birefringence axis in the sample. In another preferred embodiment, the above-described technique may be combined with ellipsometry for determining the thicknesses and refractive indices of thin films.